JOHNSTON COUNTY
LAND USE PLANNING GUIDANCE

October.2006

prepared for: The Johnston County Planning and Zoning Department

The Louis Berger Group, Inc.

Contents

The following report highlights issues and recommendations that Johnston County has been facing in the aftermath of more than a decade of strong growth. As the County has prospered, the addition of new public services, private investments, and more people has created new challenges for the County and its planning staff. A private consultant was commissioned to identify issues and bring recommended solutions to the County staff.

The results of the project are contained in this report, after being reviewed and approved by the Planning Board and County Commissioners.

Part 1. Final Recommendations on a number of specific issues, as well as brief issue statements summarizing the challenges each one presents;

Part 2. The potential scope and costs associated with producing a **Comprehensive Plan** for the County were prepared at the direction of the staff and Planning Board.

Part 3. Additional Recommendations that were not top priorities are shown as well in the event of a future need. Several case studies illustrate the recommendations.

For more information, we would invite you to contact our Planning Staff:

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Acknowledgements

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General Growth Policies.
Johnston County encourages development within urbanized or urbanizing areas.

In review of the proposed subdivisions and zoning changes, particularly Special Use applications, the County will:

- strive to **maintain and enhance the quality of the existing built environment and protecting the area's natural features as well as historic, cultural sites**. This can be done by taking into account the needs of existing neighborhoods that may be impacted by the scope and scale of proposed new developments.

- **evaluate the value and needs of key roadways or corridors and other areas and development nodes** that are significant and how they may be impacted by the scope and scale of proposed new developments.

- **recognize to the practical extent municipal interests** and their local plan objectives, notably with transportation corridors and projected land uses.

These general guidelines should inform the creation of a county-wide comprehensive planning effort (refer to *Part II – General Scope of Services and Cost Estimate for a Comprehensive Land Use Plan*). Also, Part III (Additional Recommendations) contains more language on the need for general policy development through comprehensive planning.

Amenities-in-Lieu. Amenities are sometimes offered by developers instead of meeting the full requirements for parks, landscaping, or even parking. However, there are often problems associated with calculating the real value of the amenities being offered compared to the real value of the requirements that are being offset. Small-lot developments may be particularly difficult to accommodate with amenities-in-lieu offerings, especially where several contiguous properties are being developed concurrently or by separate development actions occurring over a longer span of time.

Recommendations: Offer amenities-in-lieu only in specified hardship cases, in cases where topography prevents the provision of a full setback or landscaping requirements. Maintain absolute minimum requirements even when amenities-in-lieu are deemed acceptable. Specify the list of amenities that can be offered, such as waterfalls, playground equipment, specimen tree preservation, courtyards, street furniture, pedestrian scale lighting, landscaping, ball courts, trails, rock features, and water features. A point system can be developed so that rather than requiring specific developer actions, minimum requirements are stipulated for different types of development (as is the case now) plus other amenities equal to a threshold level of points, each amenity being worth a certain number of points that contribute towards reaching the threshold. This gives the developer more flexibility to be creative in meeting requirements, and may result in higher-quality developments over time.

Reverse Frontage Lots. In order to accommodate a reverse frontage lot, sometimes referred to as double-frontage lots (where the developed portion or structures face away from the major street, see Figure 1), it is common to require both landscaping treatments and a major visual barrier, such as an earthen berm or wall.

Recommendations. Existing language for Type "B" vegetative screening described in the Johnston County Design Manual can be applied to the landscaping requirements for reverse frontage lots, with the exception that an opaque wall or landscaped earthen berm of not less than six feet in height and made of specified materials (preferably brick or stone; no metal) be used in the rear of the landscaping that will face the major street (refer to Figure 1). The wall or berm may occur within the twenty-foot buffer area (note that the toe of an earthen berm of this height may be required to extend beyond the 20' landscape buffer where drainage or other roadside features interfere with maintaining a minimum 3:1 side slope required in Johnston County). In situations where topography demands additional height, (e.g., where the developed portion of the parcel exceeds six feet in height above the grade of the centerline of the major roadway), the berm or fence may also be required to be taller to effectively aid in the screening of traffic noise and visual impacts of the major roadway. Finally, the side yards perpendicular to the major street at each end of the wall should conform to the more extensive landscaping treatments required for front yards on the same type of street as the major street.

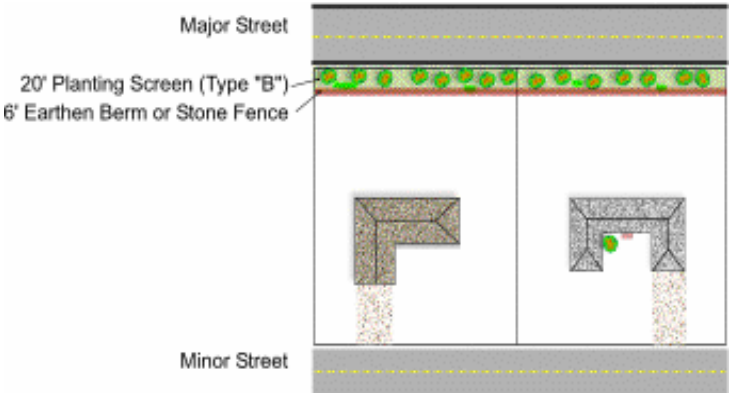


Figure 1. Reverse Frontage Lots.

Auto/Salvage-Related Requests for Special Use. Salvage uses (including used auto, auto repair, parts, "junk" yards, and other uses) have probably generated the most concern among zoning regulators of any land use with the probable exception of adult entertainment. The temporary storage of building materials should not be confused with salvage, or post-consumer, waste products although screening for gravel, rock, and builder supply yards also generate concern. Several states have passed requirements concerning the appropriate siting, screening, and management of salvage yards.

Recommendations: The existing Johnston County Design Manual calls for special screening measures to be taken for auto/salvage uses currently. Other mitigative and preventive measures could include increasing the screening area (landscape buffer) to 50', requiring a further 15' setback from any salvage area behind the landscape buffer, requiring a small building in which to conduct transactions of the salvage operation, annual licensing/inspection, limiting hours/days of operation (e.g. 7am to 6pm, Monday-Saturday), minimum distances from schools, minimum distances from perennial streams, and noise restrictions.

Stub-Out Streets. Stub-out streets are short sections of roadway that extend from an interior street of a subdivision to the edge of the property line. Stub-out streets should be constructed to the same standards for width, amenities, sub-base and so forth as required for other streets. Stub-out streets are an important element of ensuring connectivity between subdivisions and protecting the valuable and limited capacity of the street network.

Recommendations: Stub-out streets should be required for both minor and major subdivision types and according to requirements for future street access. Current street connectivity requirements call for one street access for the first 100 residential units and a second access for subdivisions larger than 200 residential units. (refer to §14-226 of the Johnston County Development Ordinance). Similarly, stub-outs should be required, one for residential subdivisions of 200 units or less, and a second for more than 200 units. It is appropriate to have each stub-out signed so that residents will know that the intent is to have the street connected to through traffic at some point in the future. Development phasing, street connectivity/collector street plans (*see also* Connectivity Policies), and environmental constraints should be considered when locating street stub-outs.

Private Off-Site Septic Systems. Off-site septic systems compound the normal issues that surround package (private) sewage treatment systems such as maintenance, design, and ramifications of failure by adding the difficulty of designating permanent easements for the septic field and lines connecting to the development. Assurances must be provided that the easements will survive to the heirs of the property, and must be enforced to ensure that no "hard" development occurs on the sewage easement.

Recommendation(s): Minor subdivisions should not permit any off-site, private treatment of sewage. Major subdivisions should require adjacency for any approved off-site treatment facility unless hardship (not financial) can be demonstrated. Other conditions should include the following:

- A homeowner's association or permanent trust established to assure responsibility for maintaining on-site and off-site treatment systems, responsibilities, and indemnity.
- Off-site systems should not be used to allow smaller lot sizes than those allowed in the current County Code of Ordinances (Zoning).
- Easements may be contained only within the common lands of the subdivision.
- Ensure the permitting and application fees for off-site systems are appropriate to the level of effort required for this type of system.
- Ensure that a full, legal description of the perpetual sewage easement is developed, including survey monumentation for irregularly shaped leaching fields, and that consistent language is used that ensures that the easement can survive heirs, joint ownership of property, and any other contingencies that could jeopardize the longevity of the easement.
- No off-site septic system components should be located within at least a 100' buffer of perennial streams or within water supply watersheds.
- Be aware of resources. The North Carolina Department of the Environment and Natural Resources (NCDENR) has a Section dedicated to on-site wastewater practices, including listing approved, innovative wastewater systems (www.deh.enr.state.nc.us/osww_new). In addition, NC State University has a one-day class dealing with off-site septic system design and operation and maintenance for $135 (www.soil.ncsu.edu/swetc/soilsacademy/2005/soilsacad05.htm#tech220).

General Special Use Adjacency Issues. A special use adjacency issue occurs when a developer requests a special use permit (in essence, an exemption from existing zoning) for a particular site that is adjacent to another site and the proposed land use is incompatible with the existing land use. An example of this could be a factory proposed next to a nursing home or invalid care center. Another example is a high-density residential neighborhood proposed next to a farm. A third example could be a liquor store proposed next to a school. The following lists potential reasons land uses may be found incompatible:

- Conflicting densities (high-density next to low density);
- Inconsistent appearance (a junkyard next to a scenic park or farm);
- Safety concerns (a prison or jail next to a school); and
- Cultural conflict (a specialty store next to a church).

In Johnston County, this is becoming more and more common as more development is occurring and it begins to abut next to existing farms and residences. People with well water that once lived in empty country now live next to a proposed gas station with underground storage tanks. Mega-residential developments are being constructed next to horse farms and cow pastures. This problem is compounded by the fact that Johnston County does not have a Comprehensive Land Use plan to guide its decision-making about Special Use Permits.

While a Comprehensive Land Use Plan provides the best guidance when making land use permitting decisions, there are also several ways that a municipality can mitigate incompatible land uses: first, through the municipal code and ordinances, and second through recommendations made within the municipality's design manual. Johnston County Code of Ordinances currently has an extensive section on special use permits and their application. This section includes provisions for restrictions on particular types of developments and land uses, as well as requirements for development review and approval. According to the Code, a special use permit must go through several series of review, including a review by county, a public hearing, and finally approval by the Planning Board. The Code of Ordinances specially regulates the following land uses:

- Commercial cemeteries
- Extraction of earth products, mining operations
- General aviation airports, STOL, and helioports
- Group care facility/adult day care facility
- Junkyards and salvage operations
- Kennels or riding stables/academies
- Landfills/land application of sludge
- Planned developments
- Planned development housing

For each of these land uses, the Code of ordinances lists various specialized restrictions such as buffering, noise levels, height restrictions, locations on roads and setbacks, etc. As done here, a code of ordinances is usually used to address specific incompatibilities, such as conflicting densities or safety concerns.

The second approach to handling special use adjacency issues is through mitigation as addressed in the County's Design Manual. The requirements in a municipality's design manual can be used to address land use incompatibilities such as inconsistent appearances and cultural concerns. When a development is proposed, the County may wish to consider requiring certain amenities, buffers, or other mitigation techniques before granting a special use permit. These amenities can improve the appearance of a particular land use, such as a gas station, so that it is more consistent with the surrounding rural area. In addition, buffers can be used to separate land uses that may be culturally incompatible (such as a church from a pool hall). Currently, the Johnston County Design Manual has an extensive chapter on landscaping and buffer requirements. This could be expanded to include more requirements such as streetscaping improvements for more urban areas (including benches and sidewalk for land uses such as a new commercial center next to a neighborhood), or noise walls and screens for more rural areas.

It should be kept in mind, however, that some mixing of land uses is advisable. In the past, zoning has been designed to separate incompatible land uses such as commercial uses from residential uses, and industrial uses from office use. Now, it has become evident that allowing a mixture of land uses within an area makes it more economically viable and creates a more vibrant local economy. Contrary to conventional zoning theory, land uses such as commercial retail shops and restaurants, as well as some office uses, are actually complemented and augmented by nearby residential neighborhoods which

generate shoppers, employees, and advertising. As Johnston County continues to grow and address its special use adjacency issues, the County should remember that a balanced mix of land uses is a healthy approach to development.

Recommendations:

- Modify existing Code of Ordinance to include more stringent language prohibiting various incompatible land uses.
- Expand Design Manual to include more requirements for amenities to mitigate the effects of incompatible land uses. Mitigation approaches include streetscaping improvements for more urban areas (including benches and sidewalk for land uses such as a new commercial center next to a neighborhood), noise walls and screens for more suburban areas, or buffers and vegetated spaces in more rural areas.

Adequate Provision for Right-of-Way for New Development. As the County continues to grow, it faces the need to ensure adequate provision for public right-of-way in new development. New developments will need to reserve adequate right-of-way for a variety of reasons, some of which are:

- Future expansion of roadway;
- Parks, schools, and greenways;
- Utilities such as water and electric lines; and
- Buffers around water bodies for water supply/watershed protection.

Traditionally, adequate right-of-way for roads, existing or proposed, will need to accommodate future expansion as estimated by future traffic volume and subsequent needed road lanes. In these situations, land is usually reserved to accommodate the area of the roadway that will be maintained publicly in the future, and excludes land to the future roadway's footprint. Currently, Johnston County's Code of Ordinances for describing the design of subdivisions indicates that:

> *"…the arrangement, character, extent ,width, grade, and location of all roads should be designed in relation to existing and proposed transportation patterns, topographical and other natural features, public convenience and safety, and proposed uses of lands to be served by such roads and existing and potential land uses in adjoining areas." (Sec. 14 – 226. (1))*

The Johnston County Code of Ordinances has limited provisions for public water and sewer system easements, as well as greenway, buffer, and other utility easements.

Other government jurisdictions in North Carolina currently have much more developed restrictions on easements and adequate provision for right-of-way in new developments. In Raleigh, a new development "shall be required to reserve land for parks, greenways, open space, schools, thoroughfares, and fire stations for a period not to exceed twelve (12) months from the date of approval of the preliminary subdivision plan or preliminary site plan" (Sec 10-3021). These rights-of-way are then purchased from the developer by the City at a fixed cost. In some other localities, rights-of-way for public use are often established as easements that allow public utilities use of the property. Requiring rights-of-way to be reserved reduces costs in the future for a municipality to expand and also can be used to reduce the potential impact of a new development on public services such as sewer and water.

Recommendations: It is recommended that Johnston County consider requiring developments to reserve rights-of-way by adding more specific language in the Code of Ordinances to address not just road rights-of-way but also greenways, parks, schools, public utilities, and stream buffers. Specific language will be based on the type of ROW to be protected and on adopted standards (e.g., roadway design standards from NCDOT).

Resources.

Butler, Handy, and Paterson, "Planning for Street Connectivity." Planning Advisory Service Report No. 515. 2003. 95 pages.

Code of Alleghany County, Maryland, Chapter 176 – Salvage Yards. Adopted May 8, 2003. 7 pages.

Town of Cary, North Carolina Code of Ordinances, Chapter 7.10 – Connectivity. Adopted May 12, 2005.

Texas Southern University, "Entering the Quiet Zone: Noise Compatible Land Use Planning." Federal Highway Administration, May, 2002. (website: www.fhwa.dot.gov/environment/noise/quietzon/index.htm).

Kenneth D. Polcak, "Highway Traffic Noise and Land Use Development." TR News, No. 240, September-October, 2005. pp. 27-38.

Sample Scope of Services for a County Comprehensive Plan

Figure 3 on the following page represents a major task listing, deliverables and cost estimate for preparing a county comprehensive plan. North Carolina, unlike some other states, does not have a requirement for a comprehensive plan other than the loosely-worded language in the NCGS 136-66.2 concerning transportation plans[1]. The following may change substantially depending on the desired products, the amount of public participation, and the degree of coordination between Johnston County and municipalities within the County.

[1] Note: The entirety of this statute is included at the end of this report as an Appendix.

Task	Months												Deliverable(s)
1. Steering Committee Workshop #1													Recognize Steering Committee, outline tasks, and draft notification to each local government participant
2. Initial Review & Analysis													
2.1 Data Assembly													
2.2 Physical Assessment													
2.3 Policy and Regulatory Assessment													
3. Community Issues Identification													Conduct small-group stakeholder interviews, four community workshops and on-line and paper surveys
3.1 Stakeholder Focus Groups (5)													
3.2 Community Workshops (4)													
3.3 Survey													
4. SWOT Report													Strength, Weakness, Opportunities and Threat Report that summarizes Tasks 1-3
5. Steering Committee Workshop #2													
6. Community Workshops (3)													Develop growth scenarios for assessment and refinement
7. Alternatives Mapping													Consolidate Workshop information to create three growth alternatives
8. Steering Committee Workshop #3													Refine growth scenarios
9. Initial Analysis													Create population, employment, and cost of services datasets for 5, 10, and 20-year forecasts
10. General Implementation													Identify roles of each agency in County and for Municipalities; assess impacts on each
11. Steering Committee Workshop #4													Review/Refine growth forecasts and implementation policies
12. Complete Alternatives Analysis													Develop 5, 10, and 20-year costs for each growth scenario based on Steering Committee input
13. Growth Scenario Presentations													Review preferred scenario from Task 11 with general public
13.1 Stakeholder Focus Groups (5)													
13.2 Community Workshops (4)													
14. Detailed Implementation													Detailed policy language and amendments
15. Steering Committee Workshop #5													Review results of public comments on preferred alternative
16. Prepare Draft Plan													
17. Steering Committee Workshop #6													Review Draft Plan
18. Stakeholder and Public Review													Conduct public review sessions in municipalities and rural County Conduct small group sessions for interviews of various stakeholders Discuss contents of draft plan with elected officials Conduct on-line and paper surveys to solicit input from citizens on draft
18.1 Stakeholder Focus Groups (5)													
18.2 Community Workshops (4)													
18.3 Stakeholder Interviews (5)													
18.4 Decision-Maker Meetings (10)													
18.5 Surveys													
19. Steering Committee Workshop #7													Refine Draft Plan based on comments from public and stakeholders
20. Adoption													Develop an inter-governmental agreement to adopt plan recommendations for transportation, land use, and general policy elements
20.1 Develop Inter-local Agreement													
20.2 Conduct Presentations (6)													

Figure 3. Sample Scope of Services for Conducting a County-Wide Comprehensive Plan.

The following addresses additional recommendations that were considered during the development of this Policy Guidance Report, but were not selected for immediate implementation. However, should circumstances change, the recommendations shown here could be accelerated.

General Growth Policies. As Johnston County continues to grow, it will need to implement some general growth policies to keep it from experiencing growing pains. Growth policies can be useful for managing growth so as to allow public services such as schools, utilities, and water and sewer facilities to keep pace with increased demand. Currently, Johnston County's development review process is its main approach to growth management. Through this process, a development must undergo review by county staff, the Planning Board, and the County Commissioners. Any development seeking a variance or appeal must also then go before the Board of Adjustment. This process allows for a modicum of public input and direction to any development that occurs in the County, but only after a private developer has made a major commitment to the project and initiated the review process.

There are several approaches to augment Johnston County's existing growth management policies. First, the County may wish to consider implementing more technical requirements during the development review process. Already, the County requires a Traffic Impact Analysis with most new development, and county zoning and the Code of Ordinances place restrictions on the siting and development of certain land uses. The County may also consider creating language in its ordinances to require evaluations during the development review process of transportation improvements on existing and future land uses, and the impact of proposed changes in land uses on the nearby economy, existing infrastructure, and community character. Similarly, the County may wish to consider changes in the Code of Ordinances to allow for higher densities and a greater mixture of land uses in more urban areas. Increasing densities and more land uses allows for a more efficient use of land and reduces the strain of new development on public utilities such as water and sewer systems. Other development review-level options the County may consider include requiring proposed developments to provide additional amenities or facilities such as a new school or water pumping station, or perhaps bicycle routes and greenways to reduce traffic increases.

A second growth management approach is to create limitations on growth in certain areas. In more urban areas, this might include creating urban growth boundaries that guarantee sewer and water connections within the boundary limits but restrict new development beyond the boundary. Similarly, an urban services area can be used to limit the

provision of services such as water and sewer beyond a certain boundary. The County may wish to consider encouraging its municipalities to establish an urban growth boundary or urban services area. Independently or in conjunction with an urban services area, the county may also wish to consider establishing connection fees which require new development to pay for new connections to public water and sewer. Similarly, the County may also consider impact fees, which require new developments to pay for the additional demand they will place on public services such as schools and roads.

There are also several support programs that may be considered to manage growth. One example is the establishment of a Transfer of Development or Purchase of Development Rights (TDR/PDR) program. In recent years, many rural counties have become concerned with the rapid decline in available farmland within their borders. A TDR/PDR program establishes a "holding" area of farmland and open space which can no longer be developed but from which development rights can be purchased and transferred to a "receiving" area in a more urban location. This allows farm and open space property owners to continue to capitalize on the market value of their properties while still preserving the rural character of the community for the public good. The County may also wish to develop a countywide Comprehensive Land Use Plan, which will guide development and may describe special programs such as a TDR/PDR Program and its limits, as well as an urban growth boundary or service area. Finally, the County may also wish to establish a program to educate local decision-makers about successful growth management policies. This program could be an annual or recurring program as part of the orientation process for new local leaders and to update longstanding leaders on changes and improvements in growth management policies.

It is important to keep in mind that while growth is good for a community, rapid and uncontrolled growth can be damaging to its character and quality of life. A managed approach to growth will guarantee the creation of an economically viable and vibrant community while preserving its nature and values.

Recommendations:

- Develop a Comprehensive Land Use Plan with Long Range Vision
- Consider New Revenue Sources to Fund Growth-Related Issues (see Case Study #2, below)

- Create Urban Growth Boundaries and Urban Service Areas that are an extension of the land use mapping already developed
- Develop and finance a Transfer of Development or Purchase of Development Rights Programs to protect productive farmland
- Adopt changes in Zoning and the Code of Ordinances to allow for higher densities in more urban areas and greater mixes of land uses
- Consider revising development review process-level requirements such as an evaluation of transportation improvements on future land use changes and the impact of proposed changes in land uses on the nearby economy, existing infrastructure, and community character
- Adopt requirements for more amenities and facilities with new development, such as a new school or water pumping station, or bicycle routes and greenways to help offset traffic increases (*see also* Amenities-in-Lieu section).

Case Study #2: Using Land Transfer Taxes to Fund Growth. Dare County, like Johnston and many other North Carolina counties, has had enormous problems developing school capacity to accommodate residential growth. In 1985, Dare became proactive, and decided to place a one percent sales tax on every real estate purchase in the county, which has raised over $90 million for school construction in the intervening two decades. Only seven counties in North Carolina (Camden, Chowan, Currituck, Pasquotank, Perquimans, and Washington) have gained state approval to levy such transfer taxes. Certain exemptions would apply, such as short-term leases, mergers, and gifts.

Concerns about the legitimacy of approving the tax without state legislature authorization caused Wake County to abandon a similar real estate transfer tax. However, there has not been conclusive evidence that a real estate transfer 'fee' would be found illegal, especially if it was supported by a detailed study documenting the direct benefit-cost of new residential development to schools and if the fee was applied in districts where it was initially collected. Nevertheless, such a fee would probably be challenged by parties that stand to gain from deferring taxes to pay for schools to other sources, such as homebuilders, realtors, contractors, and associated industries. Some concerns could be addressed by also allowing smaller homes or first-time homebuyers exemptions, and splitting the revenues equally in incorporated areas for land transactions that occur there. Concerns about negative effects on economic growth seem to be completely unfounded, according to a survey of counties that have enacted the land transfer taxes (www.chathamjournal.com/weekly/opinion/ weblogs/cross-web-blog-051405.shtml).

Connectivity Policies. Connectivity of street systems is required to reduce traffic pressures on major streets that otherwise would be required to serve every vehicular trip, regardless of length. Higher degrees of connectivity can aid in converting auto trips to walk or bike trips, better serving non-driving or aging populations, especially in areas where transit is infeasible. Connectivity can also be improved through pedestrian access points between complimentary uses such as residential subdivisions and retail land uses even where vehicular connectivity is not desirable. Connectivity policies are most often implemented through collector street plans, but can be developed through policies that require connectivity by specifying minimum block sizes and through streets spaced at minimum intervals.

Recommendations. Street connectivity plans, or more often called collector street plans, are usually maps of the study area indicating where new collector streets are to be located coupled with street design guidelines. The proposed streets usually lie closely along parcel lines to minimize unusable remnants, minimize street crossings, and reduce cut/fill slopes while still meeting connectivity needs. As new developments are proposed and implemented the sections of the street within the property boundaries are constructed as a part of the development requirements. Connections are the most important aspect of the collector street plan, and the exact alignments are allowed to shift to meet the needs of the developer. Intersection types (e.g., at-grade, interchange, or roundabout) are usually specified, along with the size of the intersection that tells if and how many turn lanes are required in order to aid in the designation of setback requirements. Even small areas often require public meetings to gather input on various alternatives before adopting a preferred option.

Policy-based connectivity ordinances are rarer than map-based efforts, and specify the minimum spacing of through streets based on land uses and the primary street type the collector streets will connect. The Town of Cary, North Carolina, has one of the more often-cited policy-based approaches, generally specifying a 1,500-foot minimum for through street spacing. Note that this spacing is not to be confused with block size maximum values or driveway spacing (currently 500 feet minimum in minor subdivisions). Other areas, such as Charlotte, have eliminated the use of cul-de-sacs in private subdivisions entirely, except where required by topographical constraints. Requirements for interconnections for cycling and walking can

be developed simultaneously with policies for street spacing and connectivity. Policy-based measures often require more staff interpretation than straightforward maps.

Johnston County is a very large, diverse area which implies that creating a map-based connectivity plan will be problematic, but is perhaps still more feasible than a policy-based approach that would have to respect important variables like environmental constraints and varying levels of urbanity. A minimum of four public meetings and multiple alternatives would be required to develop a collector street plan for the entire County. Along with non-motorized connectivity, cul-de-sac lengths and the appropriate use of cul-de-sacs should be considered when revising a connectivity policy or collector street plan (*see also* Stub-Out Streets).

Case Study #1: Town of Cary, North Carolina Connectivity Policy. Cary's Connectivity Ordinance is often cited across the State and the nation. Like Johnston County, two public street connections are required for residential subdivisions (over 100 units, unlike Johnston's one connection for the first 100 units and two connections for 201 or more units). Central to the connectivity policy is a "connectivity index" value of 1.2 or greater that must be maintained for every proposed subdivision. The connectivity index is calculated by dividing the number of links (streets, including stub-outs and culs-de-sac) by the number of nodes (end points of streets, street intersections, cul-de-sac heads, and stub-out end points).

Street connections are required every 1,250 to 1,500 feet, while pedestrian paths are encouraged where the block length exceeds 900 feet. Culs-de-sac must be connected by pedestrian pathways unless they are deemed impractical to construct. Notably, street connections that are impractical to construct or are deemed too onerous for the developer can be offset with pedestrian connections based on staff review. Cross-access between adjacent properties is required, including dedication of a cross-access easement.

-Cary Code of Ordinances, Chapter 7.10 (Connectivity)

Buffering and Visual/Acoustic Screening. The existing Johnston County Design Manual already contains detailed and appropriate information for visual screening (which also reduce noise impacts). Many of the comments brought forth by Johnston County residents during rezoning and subdivision hearings are concerned with the visual intrusion on community character of the existing environment. Noise impacts to residential properties, including a drop of 0.4 percent of the selling price per each decibel increase[2], are also significant. The placement of noise attenuation or opaque visual barriers (*see also* Reverse Frontage) is largely guided by the number of receptors (noise- or visually-sensitive locations), topography, and the degree and timing of noise being emitted. In addition to barriers, land use planning can play a critical role in minimizing exposure to noise and visually noxious sources. The following recommendations focus on land use controls rather than barrier design, the latter being a fairly well-established set of guidelines and already covered to a large degree in existing design considerations by Johnston County. Note that while placing non-residential uses near major roadways is a long-held practice, many planners (both land use and transportation) disdain commercial zoning along major arterials since this promotes strip development that can reduce roadway capacity, increase accident potential, and be unsightly. Active recreation areas such as ball fields can be placed near noise sources without compromising their use.

Recommendations: Land development codes should carefully consider the proximity of roadways of various types and not only require appropriate setbacks from the roadway, but also use future roadway designs and volumes to dictate noise attenuation strategies of new and proposed developments. Currently, the Johnston County Design Manual (§6-B) is not sensitive to roadway types in terms of buffer screens, only adjacent land uses. A variety of approved noise and screening measures should be available to developers to allow them to mesh with the existing visual character of the surrounding area. Care should be chosen when using opaque visual screens around parking lots or other public areas that do not allow good visual inspection from the street, since personal and property security are enhanced when there are good sight lines into commercial and retail properties. The appropriate use of vegetative screens can help control temperatures in the summer and winter by allowing more or less sunlight into

[2] Yeager, M.C., and M.E. Haley. *Howard County Transportation Noise Study*. Maryland State Highway Administration, July, 1982.

habitable structures at different times of the year. Maintenance bonding for a minimum of a two-year period by a homeowner's association or public trust should be required in major subdivisions.

Building placement and design can also affect the degree to which noise is focused. Brick veneers in front of a home can help shield roadway noise from the interior. The orientation of one or more structures on a site (Figure 2) can lead to better or worse noise conditions for occupants and adjacent property owners.

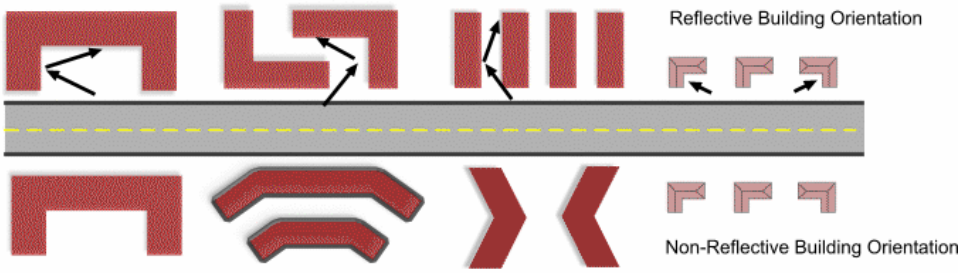


Figure 2. Reflective (Top) and Non-Reflective Building Orientations.[3]

Other recommendations such as Connectivity and Reverse Frontage should also be considered when developing screening approaches. Collector streets are an opportunity to create a network of secondary streets, tree-lined, and compatible with all types of users. Screening – trees and other plantings – is often the key ingredient in creating usable public spaces.

[3] Maryland-National Capital Park and Planning Commission (originally Highway Traffic Noise and Land Development, TR News, No. 240, September-October, 2005).

Infrastructure Strategies

The provision of schools and public water/sewer service are two of the most critical issues facing the County, its residents, and its continued economic vitality. The location and design of this public infrastructure have major implications on the County's long-term land use pattern and thus directly impacts quality of life and economic positioning. Coordinating the public infrastructure with other types of planning is a central element of growth management.

Potential Case Studies:

- King County, WA
- Prince George County, MD

Strategies for Schools

1. **Develop Long Range Plans.** Johnston County and Johnston County Schools should develop long-range infrastructure plans. Planning is necessary to guide key decisions and actions that are currently taking place. These decisions can have positive and negative consequences on the County's quality of life, human capital and well-being, economic growth in the region, natural environment, and government and school board fiscal positions. To ensure that the best decisions are being made, the County should develop a comprehensive plan and the School District should develop a long range facility plan. These plans can be developed using the following process:

   Step 1: Identify issues, opportunities, and assumptions
   Step 2: Formulate goals
   Step 3: Collect and analyze data
   Step 4: Revise goals and determine objectives
   Step 5: Develop and evaluate alternative plans
   Step 6: Select and adopt the preferred plan
   Step 7: Implement the general plan
   Step 8: Monitor and amend the plan

   These policy plans should encourage extensive involvement on the part of a variety of local residents, politicians, administrators, and other groups. Local municipalities should be included in the process to gather their input on areas under County jurisdiction surrounding towns and to coordinate with local regulations.

   The long-range school facilities plan would be based on a needs forecast and coordinated with the land use plan. The new process recently proposed by the County's consultant, ORED, Inc., for siting schools will be used as part of the

process for identifying future school locations in the plan. Other factors for siting schools may include: density of population, walkability, designated development area, proximity to town center, access to community facilities, etc.

2. **Incorporate School Facility Planning with Land Use Planning.** The County has recognized the need for more cooperative efforts with the public school system. One important step already taken is that a county school representative sits on the County Planning Board. The County and School District should cooperate further by incorporating land use planning with the planning of school facilities. An effective method for accomplishing this is through the coordination of the School Facility Plan and the County Comprehensive Plan. Goals within both plans are likely to overlap. In this case, both the County and School Board can collectively pursue specific strategies for achieving these shared objectives.

   For example, within the (future) County Comprehensive Plan, the Community Facilities chapter should specify specific methods for coordinating and regulating new residential development with the appropriate school facilities. Using various build-out analyses, the size of school facilities can be coordinated with the appropriate amount of development allowed within the zoning regulations in the Land Development Code.

3. **Base Facility Planning on Smart Growth Principals.** Both the long range school facilities plan and the County's Comprehensive Plan should be based on cost-efficient, smart growth principles. School construction formulas and expansive minimum acreage requirements have encouraged large sprawling schools on the outer edges of towns and in isolation from other development. These types of large campus schools are difficult for children to reach on foot or bicycle; increase site traffic issues; and are too isolated to serve as community centers. When smart growth principles are applied to school facilities, these schools bring a range of benefits.

   Characteristics of smart growth schools include the following:
   - Involve the community in school facility planning;
   - Make good use of existing resources, such as greyfields or historic school buildings;
   - Are located within neighborhoods and fit into the scale and design of the neighborhood;

- Act as a neighborhood anchor and community center; and
- Are usually small in size.

The benefits of smart growth schools include the following:

- *Inspire greater community involvement* – Schools are an anchor for the community through hosting an array of community events.
- *Improve academic achievement* – Researchers are finding that students in smaller schools earn higher grade point average, participate more in extracurricular activities, and have better attendance records and a heightened sense of belonging.
- *Save money* – Studies show that large schools result in unexpected expenses in transportation, security, and other areas.
- *Improve student health* – Smart growth schools encourage walking and bicycling and thus reduce the lack of routine activity which is a major factor in obesity among children.
- *Improve environmental quality* – Good school planning and design yields a number of environmental benefits and enhances the school's functionality (i.e., reduced runoff and water pollution).[4]

4. **Develop design guidelines for new school construction.** The manual would be developed through a public design charrette incorporating County school officials, County planning staff, developers, parents, and children. The outcome of the charrette would be a set of recommended design elements for the interior and exterior of school buildings and the site plan. Important topics covered could include: schools as centers of community; site circulation; public health, safety, and security; learning environment; and flexible and adaptable spaces. The document would then help guide the construction of new schools in the County.

5. **Make schools community centers.** The design of educational facilities should sustain the integral relationship between a school and its community. Schools can serve a variety of community needs in partnership with a wide spectrum of public, civic, and private organizations. The design, location, and public access are the most important factors in ensuring that schools become centers of community. The following actions can be taken to ensure

[4] National Trust for Historic Preservation, *Smart Growth Schools: A Fact Sheet*

that Johnston County schools become centers of community:

- Schools are located close to residential neighborhoods;
- Partnerships between Johnston County Schools, the County, and NCDOT are developed further;
- Design guidelines help developers build schools with a community-focus and with easy and safe pedestrian circulation;
- An agreement is formed with Johnston County Schools to allow the general public access to school facilities at certain times. The open access should include playfields for neighborhood recreation, classrooms for civic/non-profit organizations, and auditoriums and cafeterias for community meetings.

6. **Establish Impact Fees and Other Funding Remedies.** The rapid demand for schools in Johnston County is causing shortfalls in funding and thus a continual reliance on large bond packages. In order to provide more funding, the County should put into place new revenue generation and cost-saving mechanisms, some of which will require cooperation by the State. Local governments across the nation are encountering similar financial shortfalls due to the high costs of education.
   - *Impact Fees.* Local governments are increasingly turning to private funding sources to assist in public facility finance. Development impact fees provide valuable resources by requiring developers to pay some portion of the impact of their projects on off-site public facilities, schools (along with transportation) normally being the most expensive impact. It is important to note that impact fees have not passed through the fine sieve of the tax-averse North Carolina State Legislature in some time.
   - *Lease-Purchase Option on New School Facilities.* Lease-Purchase options might allow for faster start-up times for school facilities. Making lease purchase an option eligible for school grant matches would be a critical component of this item.
   - *Allow School Funding Pools to be Invested in Revenue-Bearing Instruments.* This would increase the rate of return on funding pools allocated for school construction.
   - *Exempt State Sales Tax for New School Construction and Labor Components.* North Carolina pays for its schools, but also taxes construction and other labor as the

schools are being built. Eliminating the state sales tax on these items would reduce the costs of construction. A major consideration by the NC State Legislature would be required to make this happen in North Carolina.

- *Remove Barriers for Schools to Partner with Non-Profit Agencies.* Schools should be able to benefit from non-profit donations and partnering opportunities as any other institution. Removing the legal barriers for doing so would be a major step towards allowing contributions to the school system.[5]
- *Explore Public-Private and Public-Public Partnerships.* Schools, when they are not in use, can be used for other functions in the evenings and on weekends. Private interests should be allowed to participate in the financing of these structures to permit increased use and financing options for new or expanding school facilities, as well as participating in the costs of smaller capital projects.[6] Understanding the school system's core values is an important consideration to ensure that corporate project partners do not become too invasive in the school's operations or appearance. Multiple public agencies may be interested in recreational areas and joint-use agreements for school facilities as well.

7. **Explore Alternative Delivery Vehicles.** Performance-Based contracting; construction management at risk; design-build; and finance-design-build options may open other avenues for reducing construction costs for new and expanded school facilities.[7]

[5] King County Task Force on Impact Fees/School Construction Financing Alternatives, Recommendations to King County Executive Ron Sims for State Action Regarding School Construction Financing, 11.20.1998. (www.metrokc.gov/smartgrowth/schoolreport.htm)
[6] *A How-To Guide for School-Business Partnerships,* The Council for Corporate and School Partnerships.
[7] David Lever, *Outline of Alternative Methodologies*, Task Force to Study Public School Facilities Alternative Funding and Financing Methodologies for Public School Construction, 10.7.2003. (http://mlis.state.md.us/other/education/public_school_facilities_2003)

Strategies for Public Water/Sewer Service

Water is a finite resource that we all depend upon, and all take for granted. This resource is critical for public health, agricultural production, and economic growth. In order to continue providing a healthy and affordable living environment along with sustainable growth in agriculture and industry, Johnston County must carefully plan and manage the use of its water resources.

1. **Utilize levels of service standards for estimating the need for all types of infrastructure.** The level of service is the amount of community service people desire, given a relative cost. The service standard is determined through an investigation of current use of facilities and consumer preferences. For example, level of service include number of pupils per student, students per classroom, gallons of water per capita per day (gcd), acres of preserved open space per person, acres of farmland per person, recreational space per person, etc. With population projections, the County can determine the amount of community facilities or resource required to meet a specific level of service. The County can then proactively work toward protecting or developing that amount of the resource.
2. **Develop a utilities master plan.** A utilities master plan should be incorporated into a County Comprehensive Plan. The master plan for utilities should be coordinated with the land use plan. The plan includes future needs and facilities in relation to urban growth and water resources. This forms the basis of the water and sewer master plans and encompasses long-range watershed needs, storage facilities, and flood control.
3. **Establish growth management policies.** Growth management policies within the land use plan are the most important factor in extending the water and sewer systems. The overall land use plan should guide the location of public water and sewer. *Water and sewer service should be strictly limited to areas designated for growth in the land use plan.* The growth management policies should include regulations calling for mandatory, not voluntary, connection of new development to public water and sewer within service areas to facilitate system planning and financing and to control growth. Financial arrangements should be included where new lines cross vacant areas and where oversized pipes are installed in anticipation of future growth.

4. **Focus development in towns and nodes**. Through focusing commercial and residential development into towns and centers, water and sewer infrastructure can be efficiently delivered in a fiscally-sound manner. The quantity and distribution of commercially zoned land should be reexamined with a focus on promoting in-fill, mixed-use, and higher intensities within key locations. Restructuring the commercial areas into nodes of higher-density development along key intersections will help enable water and sewer to be delivered cost-effectively, preserve water recharge areas, decrease per capita water usage, and assist in the management of stormwater runoff. The County should promote the "new" form of development into these nodes through limiting the extension of water and sewer outside these areas, increasing allowable densities, public investment, fast track approval, transfer of development rights, business improvement districts, and other development incentives. The new developments should be comprised of a variety of residential, commercial, and recreational uses that allow the center to be used at all times.

5. **Incorporate a smart growth matrix for site plan review.** The matrix provides criteria for developments in public service areas to ensure a preferred land use form that minimizes stormwater runoff; preserves aquifer recharge areas; and reduces erosion, sediment, and pollutants in runoff. The matrix also offers incentives for incorporating best practices.

6. **Use the existing development allotment program to slow growth**. Use the existing development allotment program to slow growth until sufficient water supplies are secured. Because of rapid growth, Johnston County should pursue purchasing new land for expansion of waste water treatment plants, expand water intake valves, and obtain water purchase contracts with local governments.

7. **Raise current connection fees.** In order to secure necessary water and sewer infrastructure and resources, the County will need to increase the existing connection fees for connecting to water and sewer lines. The current impact fees are $2,400 per residential unit for wastewater and $500 per residential unit for water. An evaluation of the fee structure may reveal that the fees insufficient to cover County costs. Since water resources in the Triangle Region are inadequate during periods of drought, fees need to be increased to provide sufficient resources for planning future growth and maintenance.

Land Use Strategies

Land use strategies are crucially important to establishing desired growth patterns. In addition to the strategies outlined below, the memo dated 1/24/06 titled "Importance of Conservation Tools for Success" covered policies for preservation and conservation.

1. **Develop a Land Use Plan.** Many of the policies discussed in this memorandum could be more easily addressed with the presence of a County-wide land use plan. This process for developing a land use plan should involve input from the local towns, especially for the areas within the Municipal Transition Zones (MTZ) surrounding their towns. The County should develop public consensus regarding the desired densities throughout the County and the overall development pattern and type of development. Public input can be elicited through community charrettes, a growth management steering committee, and visual preference surveys. A thorough land use plan should include an analysis of existing conditions; a projection of land development; and a future land use plan. The future land use plan should address land use categories and their locational aspects. It may be useful to have input from the Triangle J Council of Governments to coordinate with regional plans.

Highlights of a Purchase of Development Rights Program:

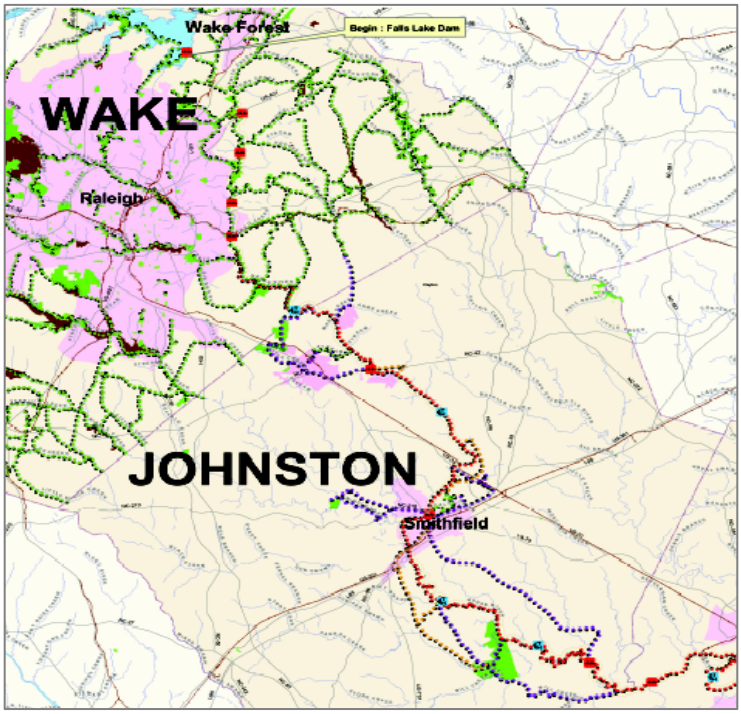
- A landowner voluntarily sells the development rights to a parcel to a public agency or land trust
- Ownership rights are retained by the landowner, but a conservation easement is placed on the land and recorded on the title.
- The buyer purchases the development rights to the parcel, and can use those rights to increase density of other developments in preferred areas.

2. **Purchase of Development Rights.** The County, in an effort to focus growth in the towns and MTZ's, could develop a Purchase of Development Rights (PDR) program where farmers and rural land owners could preserve their farms for agriculture, scenic beauty and wildlife habitat, yet still realize the full economic potential of their land. This could be achieved by implementing a development impact fee ordinance to provide funds for open space preservation. There is some precedent in North Carolina in developing Purchase of Development Rights programs – Orange County has a long-standing program. In addition to retaining important farmland, this program has an economic benefit to the County in that it can help concentrate growth in areas designated as desirable by the land use plan. Further discussion of PDR's can be found in the memo dated 1/24/06.
3. **Diversification of the County's Tax Base.** Since the cost to service residential development is more than the tax generated by the development, the County should

aggressively pursue diversifying its tax base through commercial and industrial development. The County's economic development strategy should build on: retail services for its growing population; inexpensive, vacant land near a large MSA with exceptional highway access; streamlined development process; and close proximity to major institutions and facilities in the Triangle Region.

4. **Establish Urban Service Areas.** Urban service areas can be used to direct growth by designating them as areas that will receive urban services such as water and sewer. Urban service areas should be used in conjunction with growth management policies cooperatively established by the County and municipalities. The boundaries of the urban service areas are determined by population forecasts such that anticipated growth over a period of time can be accommodated by the designated area. Once the boundaries have been determined, the jurisdictions can begin phasing in services to meet demand. Periodically, the boundaries can be adjusted to accommodate new demographic information or growth trends. This program has been successfully established in most of Wake County.

5. **Open Space/Recreation Plan.** Develop an open space/recreation plan that includes a policy of concentrating open space around other open space initiatives, such as the Mountains-to-Sea Trail. The Mountain to Sea trail has received funds in the latest TEA-21 transportation bill, and is in the final planning stages. Once complete, the trail will run from Wake County, along the Neuse River and into Wayne County. An open space and recreation plan would ensure that the trail remains pristine, as well as accessible to all residents of the County.



Proposed paths of the Mountains-to-Sea Trail in Johnston County

Transportation Improvement Strategies

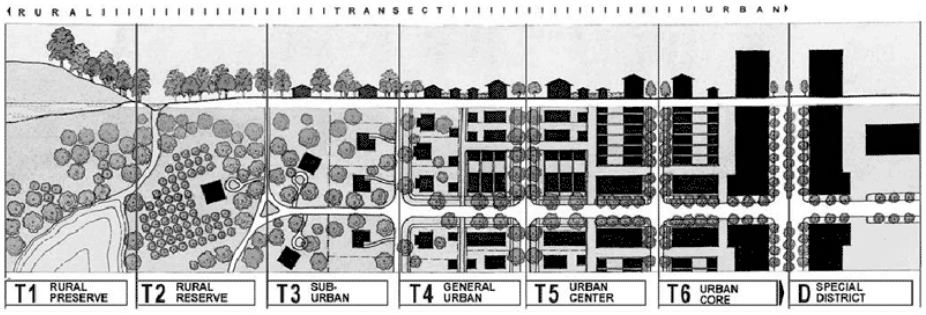
Transportation issues are perhaps the most publicly recognizable failure of good planning, strong capital improvement programs, or both. The public does not usually recognize that the State is responsible for addressing transportation problems, even though North Carolina law places the responsibility of transportation infrastructure largely in the State's jurisdiction. Johnston County, while constrained by North Carolina's laws as to what the County can accomplish with providing road construction funding, can nevertheless strongly influence the costs associated with rights-of-way, certain types of mitigation, and the demand side of the supply-demand equation that drives traffic congestion.

1. **County Participation in State-Funded Roadway Projects.** This was an issue brought up directly by the County Planning Board on 12.20.2005. Counties in North Carolina may not directly participate in constructing public roadways or holding rights-of-way for roadway construction projects. In order for any county to receive funds for roadway projects, it must have a locally and state-adopted transportation plan. The issue of contributing to maintenance, as well as construction or right-of-way holdings, is also significant to the County, and is currently under investigation with NCDOT and the UNC Institute of Governments (IG). While the County can require setbacks to conserve future right-of-way for road widenings, it is the escalating costs of construction that have forced many NCDOT projects to be delayed.
2. **Access Management.** Access management is an umbrella term that covers any measure that attempts to reduce the number of conflict points between motorists, between motorists and pedestrians, or between motorists and cyclists. Effective access management programs have a long- and short-term focus, including driveway consolidation, driveway spacing standards, turn restrictions, cross-access between properties, and intersection design criteria. Past studies have found reductions in traveler delay in a congested corridor on the order of 59% for a managed v. an uncontrolled scenario.[8]
3. **Mobility and Accessibility Standards.** Roadways have different purposes across Johnston County: rural, farm-to-

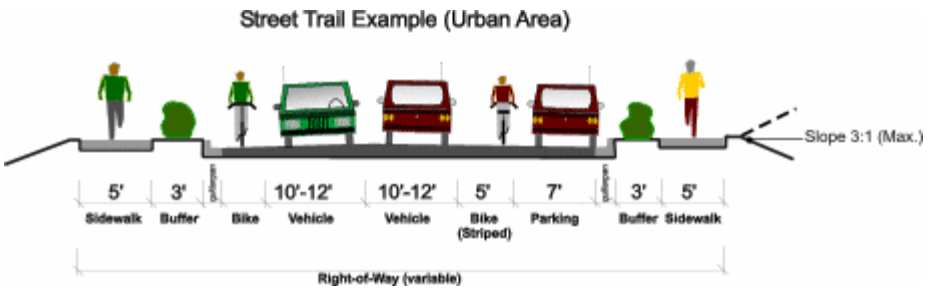
[8] *Access Management – A Synthesis of the Research*, Minnesota Department of Transportation, St. Paul, MN. June, 1998, 32 pages.

market; rural, two-lane residential collectors; suburbanizing, higher-volume collectors; and urban, mixed-use streets. The design criteria for roads in their current and expected future setting should be designated into one of several categories, and the design for that type of roadway clearly laid out in terms of shoulder design, curb-and-guttering, landscaping, lighting needs, roadway lane travel widths, bicycle facilities, pedestrian facilities, intersection and turning treatments, and access level. The most useful device for considering this concept is the transect, which describes how roadways change as they transition from one environment to another. The City of Portland, Oregon, has adopted preferred street cross-sections to accommodate various types of users for different kinds of facilities. This is described in "Creating Livable Streets: Street Design Guidelines," [9] and puts the transect concept into a practical set of design standards for streets of varying purposes. Figures 1a and 1b illustrate transect and street design concepts.

4. **Subarea Transportation Planning.** Johnston County would benefit from master planning around some interchange areas and high-growth corridors. The benefits should include detailing provisions for various land use, protecting the value of adjacent properties, connectivity, signal placement/design, utility extensions, traffic flow concerns, and access management. Often, subarea and corridor plans are a good chance to engage the public and



<**Figure 4a.** The Urban Transect, initially developed by Andres Duany. *(Duany Plater Zyberk Consulting) The transect is only a conceptual way of thinking about land use and transport design.*



<**Figure 4b.** A practical set of street standards requires integrating utility, pedestrian, cycling, appearance, economics, safety and community values with capacity needs. *(LBG)*

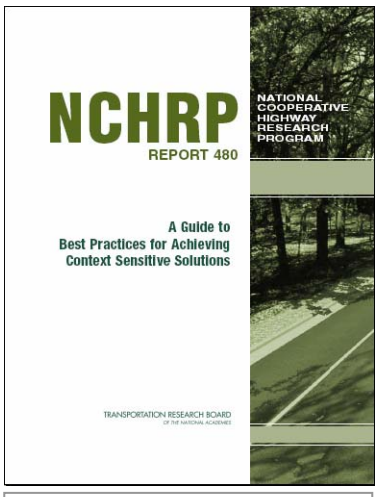
[9] "Creating Livable Streets: Street Design Guidelines," Second Edition. Portland

business owners early in the development of the study area, or to at least proactively address future issues from private and public sector development. An excellent local example was the work completed on the US 64 Corridor, completed by Mr. Lane (then with the Capital Area MPO) and Stantec Consulting, Inc. with the Town of Knightdale. The study provided future land uses for open space, commercial, mixed-use residential, and street connections that, when implemented, would provide a higher tax base, preserve open space in the area, and allow the major roadway facilities to function at the same or higher level of service.

5. **Adopting Transportation Performance Measures.** Without understanding what the transportation objectives are for the County, performance assessment is impossible. Adopting performance standards such as level-of-service guidelines, and then evaluating them on a regular basis allows officials and citizenry to understand what the targets are for their communities. Setting performance measures has become an industry science and standard, and is now viewed as a critical element of the transportation planning and public engagement processes.

6. **Managing Growth.** Transportation construction in the form of adding capacity plays a significant role in directing growth to some places, while keeping growth in other areas limited due to increased traffic congestion. Ensuring that sidewalks and bicycle facilities are a part of all new roadway construction improve the safety and travel options. The ability of private sector partners to assist in the development of the roadway or ancillary facilities is an important consideration. Marrying the development potential of subareas within the County to public infrastructure should be an ongoing task.

7. **Context Sensitivity.** The physical design and appearance of a facility are important, and so is recognizing that the design and appearance of the same road depends on the context of the facility. The rubric for this kind of assessment is "context sensitivity." Context sensitive solutions (CSS, sometimes called CSD for "context sensitive design") has been promoted heavily at NCDOT for the past three years, including training many of the upper-level, mid-level, and field personnel in the evaluation and practice of applying CSS. NCDOT staff is taught to consider a number of factors as they evaluate solutions to roadway design issues: Is the



Both nationally and at the NC state levels, CSS/CSD has enjoyed increased importance.

Metro, 2002, 91 pages.

road or pedestrian facility in a rural, suburban, or downtown area? Is the biggest component of traffic traveling through an area or is it destined to stay local? Are there important historic, architectural, or natural features that should be preserved and enjoyed along the roadside? Is the land use in the corridor primarily residential, commercial, or agricultural? Orientation of buildings, location of parking areas, landscaping requirements, setbacks, curvature, and other design elements can be used to help create a more attractive and safer streetscape. Working with NCDOT to achieve these ends requires early coordination and prior planning to develop a consensus of different community's needs from the transportation system. The Transportation Research Board has produced a very accessible national guidance document[10] on context-sensitive solutions, which identifies several key tasks:

- Decision-making;
- Reflecting community values and the value of natural resources;
- Safety;
- Financial feasibility;
- Problem definition;
- Project development and alternatives development;
- Alternative screening and evaluation;
- Alternative selection; and
- Implementation.

[10] "NCHRP Report 480: A Guide to Best Practices for Achieving Context Sensitive Solutions." NCHRP, Transportation Research Board, 2002, 137 pages.

Community Character Strategies

Potential Case Studies:

- St. Lucie County, FL
- Hamilton County, TN

The rapid growth of Johnston County has caused planners to focus more on getting developments approved than on the quality of development. This quantity over quality approach has led to a sprawl approach to the types of development with very little public and social space. The goal of increasing community character is to infuse vitality into the built and un-built environments through increased construction standards, and harmonious and sustainable development. The following are recommendations for implementing a community character program in Johnston County.

1. Community Character Inventory. The first step in developing a design review manual is to immediately create and periodically update a green print for Johnston County that includes those areas and features that make Johnston County a unique place. This can be accomplished by conducting an inventory of unique features in the County. The inventory of sites should be developed through a community based effort and include the following types of places:

1. The National Register of Historic Places – Things such as historic sites and buildings. Other known archeological sites should also be considered.
2. Scenic Landscapes and Vistas – Scenic resources can be defined as "those landscape patterns that are visually or aesthetically pleasing and which therefore contribute to the definition of" Johnston County [11]
3. Open Spaces and Old-Growth Forests - Old growth forests are rare and ecologically self-sufficient, and should be protected.
4. Productive Agricultural Lands and Soils – Keeping agricultural lands the way they are rather than letting them develop can contribute to a rural feel throughout the County.
5. Parks and Recreation Areas/Centers – These areas can provide open space, as well as social activity areas.

In addition to the inventory, public input should be solicited for guidance towards the *characteristics* that make Johnston County a unique place. This could include an architectural style that is found throughout the County, or the urban/rural

[11] New York States Central Pine Barrens, Comprehensive Land Use Plan, Volume 2: Existing Conditions, 1995

ratio that exists. It should also include feedback as to the type of new development that is desired by residents. The feedback from residents can be used as an input into the next phase of developing design guidelines, developing design standards.

2. **Establish Design Standards.** Successful design standards are ones that can be easily incorporated into the planning process, and can protect the area from unsightly development. While Johnston County has developed some design guidelines, a broader approach to design standards beyond their current scope, which are limited to parking and landscaping, would be useful in conveying to developers the type of development preferred by the County. Design standards addressing setbacks, facades, building heights, floor to area ratios (FAR), and density of development can contribute to achieving the goals for community characteristics set forth in the inventory phase.

The elements of a good design standard document should be based on different design control districts. Typically, the design control districts will be in synchronization with underlying zoning districts, however design control districts do not have to be county wide. A design control district could be developed for a specific area, such as an area around a historic site, or for areas within a floodplain. Once these districts have been identified, objectives for each individual district can be established in terms of what the area should look like, and how to go about achieving that look. In addition to visual aids, the Design Guidance should contain the following two elements[12]:

1. District description: this might include a name and intent for the district. For example:
    a. Municipal Transition District – The intent of this district is to encourage development that focuses on neighborhoods, has an attractive pedestrian setting as well as good automobile access, and ample public activities.
    b. Agricultural District – The intent of an agricultural district is to protect the scenic beauty of rural areas and to preserve prime farmlands.
    c. Commercial – The intent of a commercial district is to provide ample parking, while limiting visual

[12] Daniels, TL.; Keller JW; Lapping MB *The Small Town Planning Handbook*; American Planning Association, 1995

pollution such as mismatching signage, and large bulletin boards.

This section may also briefly touch on a description of aesthetic and characteristics of each district.

2. Guidelines and Standards: This section of the document should specifically address how to maintain the character for each of the design districts. Specifically, the section should address:

   a. Site Characteristics such as public space, transitions (i.e. making sure that more intense development is compatible with less intense development through the use of setbacks and other site specific techniques), traffic calming strategies, and parking and pedestrian facilities

   b. Architectural Characteristics, such as sustainability, context and character, materials and colors, roofs, and building height restrictions

   c. Landscape, such as streetscape coordination, screens and buffers and retention walls.

The design standards should be developed with as much public input as possible, using techniques such as Visual Preference Surveys, where meeting participants are presented with photos of various types of developments, including residential, office, commercial and streetscapes, and are asked to rank the pictures based on how much they like the particular development.

Sample Design Excellence Award

3. Design Excellence Award Certificate. Create a Design Excellence Award which can be awarded by the planning staff to developers who exceed the design standards set forth in the design manual. The determination of the certificate award will be made by the majority of staff conducting reviews of the site plan. Developers like to acknowledge the merits of their projects during Planning Board and Council reviews, and may be convinced to "go the extra mile" to receive such a commendation.

4. Establish a Design Review Committee. As part of the sub-division approval process, plans would need to be presented and approved by a Design Review Committee. Depending on the extent of the Design Standards, the committee can be responsible for reviewing all plats for the entire County, or for specific areas such as historic districts and sites or visually sensitive areas. The committee would be charged with enforcing the County's design standards.

5. Adopt Elements of Form-Based Zoning. Form-based zoning deals primarily with materials, mass, placement, and other functional features of proposed developments as opposed to traditional zoning categories that are focused on separating incompatible uses and densities. A neighborhood commercial center might be a good companion to an existing residential area, but the style of the structure, landscaping and other elements often prevent acceptance of such uses in traditionally residential areas, promoting more automobile trips and "cookie cutter" subdivisions. While the leap to form-based zoning practice is too large for the County to undertake, inserting some elements of form-based practices would help address some concerns about proximity effects from various land uses that arise now in the public debates about new developments.

Appendix I. § 136-66.2. Development of a coordinated transportation system and provisions for streets and highways in and around municipalities.

(a) Each municipality, not located within a metropolitan planning organization (MPO) as recognized in G.S. 136-200.1, with the cooperation of the Department of Transportation, shall develop a comprehensive transportation plan that will serve present and anticipated travel demand in and around the municipality. The plan shall be based on the best information available including, but not limited to, population growth, economic conditions and prospects, and patterns of land development in and around the municipality, and shall provide for the safe and effective use of the transportation system. In the development of the plan, consideration shall be given to all transportation modes including, but not limited to, the street system, transit alternatives, bicycle, pedestrian, and operating strategies. The Department of Transportation may provide financial and technical assistance in the preparation of such plans. Each MPO, with cooperation of the Department of Transportation, shall develop a comprehensive transportation plan in accordance with 23 U.S.C. § 134. In addition, an MPO may include projects in its transportation plan that are not included in a financially constrained plan or are anticipated to be needed beyond the horizon year as required by 23 U.S.C. § 134. For municipalities located within an MPO, the development of a comprehensive transportation plan will take place through the metropolitan planning organization. For purposes of transportation planning and programming, the MPO shall represent the municipality's interests to the Department of Transportation.

(b) After completion and analysis of the plan, the plan shall be adopted by both the governing body of the municipality or MPO and the Department of Transportation as the basis for future transportation improvements in and around the municipality or within the MPO. The governing body of the municipality and the Department of Transportation shall reach agreement as to which of the existing and proposed streets and highways included in the adopted plan will be a part of the State highway system and which streets will be a part of the municipal street system. As used in this Article, the State highway system shall mean both the primary highway system of the State and the secondary road system of the State within municipalities.

(b1) The Department of Transportation may participate in the development and adoption of a transportation plan or updated transportation plan when all local governments within the area covered by the transportation plan have adopted land development plans within the previous five years. The Department of Transportation may participate in the development of a transportation plan if all the municipalities and counties within the area covered by the transportation plan are in the process of developing a land development plan. The Department of Transportation may not adopt or update a transportation plan until a local land development plan has been adopted. A qualifying

land development plan may be a comprehensive plan, land use plan, master plan, strategic plan, or any type of plan or policy document that expresses a jurisdiction's goals and objectives for the development of land within that jurisdiction. At the request of the local jurisdiction, the Department may review and provide comments on the plan but shall not provide approval of the land development plan.

(b2) The municipality or the MPO shall provide opportunity for public comments prior to adoption of the transportation plan.

(b3) Each county, with the cooperation of the Department of Transportation, may develop a comprehensive transportation plan utilizing the procedures specified for municipalities in subsection (a) of this section. This plan may be adopted by both the governing body of the county and the Department of Transportation. For portions of a county located within an MPO, the development of a comprehensive transportation plan shall take place through the metropolitan planning organization.

(b4) To complement the roadway element of the transportation plan, municipalities and MPOs may develop a collector street plan to assist in developing the roadway network. The Department of Transportation may review and provide comments but is not required to provide approval of the collector street plan.

(c) From and after the date that the plan is adopted, the streets and highways designated in the plan as the responsibility of the Department of Transportation shall become a part of the State highway system and all such system streets shall be subject to the provisions of G.S. 136-93, and all streets designated in the plan as the responsibility of the municipality shall become a part of the municipal street system.

(d) For municipalities not located within an MPO, either the municipality or the Department of Transportation may propose changes in the plan at any time by giving notice to the other party, but no change shall be effective until it is adopted by both the Department of Transportation and the municipal governing board. For MPOs, either the MPO or the Department of Transportation may propose changes in the plan at any time by giving notice to the other party, but no change shall be effective until it is adopted by both the Department of Transportation and the MPO.

(e) Until the adoption of a comprehensive transportation plan that includes future development of the street system in and around municipalities, the Department of Transportation and any municipality may reach an agreement as to which existing or proposed streets and highways within the municipal boundaries shall be added to or removed from the State highway system.

(f) Streets within municipalities which are on the State highway system as of July 1, 1959, shall continue to be on that system until changes are made as provided in this section.

(g) The street and highway elements of the plans developed pursuant to G.S. 136-66.2 shall serve as the plan referenced in G.S.

136-66.10(a). (1959, c. 687, s. 2; 1969, c. 794, s. 3; 1973, c. 507, s. 5; 1977, c. 464, s. 7.1; 2001-168, s. 1.)